NATIONAL WEATHER SERVICE

Legacy System Site Component Decommissioning Plan:

MicroART and Sippican W9000

May 2005

Version A Working

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Systems Operations

Executive Summary

As major systems are commissioned, for example, the Advance Weather Interactive Processing System (AWIPS), legacy systems in use today are subject to the *National Weather Service Policy Directive (NWSPD) 80-2, System Commissioning and Decommissioning*. **Legacy systems** are defined as those systems in use prior to Stage I of the Modernization and Restructuring (MAR), supporting a portion of the NWS mission. As new systems are being commissioned, they become *legacy systems*. This policy establishes the decommissioning process to ensure that system equipment (e.g., site components) installed at an NWS site is no longer required in its official capacity in the conduct of appropriate NWS service operations and can be removed. The Legacy System Decommissioning Plan details the manner in which sites meet the decommissioning requirements of *NWS Instruction (NWSI) 80-202, System Decommissioning Process* for AFOS and a host of other legacy systems.

Deactivation means a system can be "turned-off" in any manner that causes it to be inactive. For example, turning a system off or unplugging a communications link. Deactivated systems can be placed back into service, in certain cases, until it is decommissioned officially. The process of deactivating a legacy systems normally begins at, or shortly after, the commissioning of the new technology, for example, AWIPS, CRS. In the case of the microcomputer Automatic Radio-Theodolite (MicroART), the process is reversed, that is, it will be deactivated before the Radiosonde Replacement System (RRS) is installed, since both will reside within the same radome on top of the inflation building. In a few cases, a new building has been built adjacent to the old one and the RRS can be placed within the new one.

During this process an on-site decommissioning focal point (DFP) determines when the legacy system can be deactivated and ready for decommissioning. *Decommissioning* is the **decision,** through a careful evaluation of site operations, to no longer require one or more legacy systems as a result of the new technology. After a legacy system has been decommissioned officially, the system or communications link is then ready for disposal related activities.

This plan has been prepared according to *NWSPD 80-2,* and *NWSI 80-202*. This plan is a direct result of this policy and instruction.

Evaluations are based on detailed evaluation criteria specific to the legacy system that address assessments established by assessments peculiar to system. Note, the term *system* includes hardware, software, and communication interfaces. These assessments are of:

- Legacy System Property Accounting
- Preparations for Transferring Communications Links
- Notification of Users
- Preparations for Disposal are Complete

Any deficiencies encountered during the evaluation are addressed through action coordinated at the local, regional and NWS headquarters levels. As the evaluation is completed, a **Legacy System Decommissioning Checklist** is used to record the results of the evaluation.

The completed checklist is then incorporated, by the evaluation official, into a **Decommissioning Readiness Report** for the site and sent to the appropriate official to begin review by appropriate local, regional and national managers. Their recommendations to decommission are sent to the Systems Operations Division Chief for approval.

Implementation of the legacy system deactivation will be preceded by proper notifications of users as well as the expected date of the decommissioning. **Official** use of the legacy system in the conduct of appropriate NWS service operations ceases upon its decommissioning.

The plan for decommissioning the legacy upper air system is as follows:

- Before the Radiosonde Replacement System (RRS) is installed at a field site, the legacy system will be decommissioned before being deactivated
- The RRS will be installed in the same footprint as the legacy system, so there will be a period of no observations from the site until the RRS is installed and made operational
- The final decommissioning report will be cleared through the Meteorologist-in-Charge and the associated regional office prior to being processed at WSH.

Table of Contents

List of Figures

List of Tables

List of Exhibits

Site Component Decommissioning Terminology

Definitions for terms related to decommissioning are listed below. These terms are as used by the *NWSPD 80-2, System Commissioning and Decommissioning* and those established in this plan to describe the commissioning procedures.

System Decommissioning: the process through which technical and administrative judgments are applied qualitatively and quantitatively to identify and support determinations of how and when (a) individual operational equipment or site components at NWS sites can be decommissioned and disposed, and (b) associated national, regional, and local system support functions can be phased out.

System: the totality of equipment, facilities, and supporting functions (e.g., maintenance, logistics, and communication networks) required by the technology to provide the desired operational capabilities.

Site Component: a portion of a system at a staffed or unstaffed NWS site (e.g., a surface observing installation remote from any NWS office) which is providing a required functionality for the given location. A given system can have variations in its site components.

Equipment: as opposed to a site component, is a stand-alone or one-of-a-kind device at a given NWS site used for the collection, processing, dissemination, or distribution of weather data or service products. For the purposes of this plan, the terms system and site component shall include equipment.

Site: a location where one or more site components are present. The site may or may not be staffed. Note, for the purposes of this document, a River Forecast Center (RFC), Weather Forecast Office (WFO), or National Centers for Environmental Prediction (NCEP) are viewed as a site even though two may be collocated.

Decommissioning: the official decision to no longer use an operational system and/or site component as an official source of NWS data and/or services. In the case of individual operational site components, such a decision is the result of either (a) the component's replacement by a site component(s) of a new system, or (b) the determination that the component's function is no longer required at its NWS site.

Disposal: the set of actions to remove decommissioned site components from the NWS property inventory and restore the site to a condition agreed to by all appropriate parties.

Support Functions: those activities or capabilities supporting equipment or system operations. Such functions include; field maintenance, depot repair, logistics, software support, communications, training, technical monitoring and control, program management, and system operations and backup among sites.

1 INTRODUCTION

The radiosonde is one of the most critical observational tools for obtaining atmospheric measurements required for numerical prediction, research models, climatology, and regional forecasts. It also serves as the benchmark from which estimates of satellite and thermodynamic profiler temperature and moisture retrievals are derived. Rawinsonde observations (short for radio-wind sounding) form the backbone of weather forecasts and upper air analyses as part of the World Meteorological Organization's (WMO) World Weather Watch. Of the 800 or more upper air stations around the world, the United States operates a network of over 90 upper air observing stations reaching from the conterminous United States (US) to pacific islands near Japan, and from Alaska to below the equator.

The mesoscale and synoptic scale operational and research programs of the 1990s and beyond will require a cost-effective sounding system, providing higher-quality wind and thermodynamic data. The radiosondes used for these programs must economically provide the best data available, complement the new profiling and satellite technologies, and serve as a performance standard to evaluate the accuracy of these new technologies.

The National Weather Service (NWS) upper air legacy systems in use today have complex mechanical ground system components, which are difficult to maintain and costly to replace. The NWS will replace its current, aging network of upper air observing systems with modern, more reliable systems that will provide soundings with increased resolution and accuracy. The Radiosonde Replacement System (RRS) is a leap forward from previous sounding systems. It will introduce a state-of-the-art ground tracking system and a Global Positioning System (GPS)-based radiosonde in response to validated system obsolescence and reduced operating frequency requirements.

The RRS hardware consists of the following:

- A new GPS-based radiosonde to aid in wind data calculation.
- A new ground tracking system, the Telemetry Receiver System (TRS), to acquire and track the radiosonde signal.
- A Signal Processing System (SPS) that uses differential GPS data to pre-process and format pressure and/or altitude, temperature, and humidity values, wind, and position data for the workstation.
- A Radiosonde Surface Observation Instrumentation System (RSOIS) that contains a suite of equipment for providing surface readings during pre-flight.
- A Precision Digital Barometer (PDB) that provides surface pressure during pre-flight.
- A Workstation to run the flight application, control flight operations, support limited telemetry analysis, provide local and NCDC archival, and transmit messages to AWIPS.

Refer to reference 2 in Table I for additional information about the RRS.

1.1 Description of the Deactivation/Decommissioning Processes

Legacy systems are defined as those systems in use today which support a portion of the NWS mission. As such, systems such as MicroART and the Sippican W9000 (see Section 2) constitute legacy systems. As the new upper air system becomes commissioned, it becomes the legacy system. RRS will become the legacy system when it is fully commissioned. This event is currently scheduled for sometime in FY07.

Legacy systems are first **deactivated**, i.e., turned off, after the decommissioning event. In the case of upper air, deactivation will take place in order to allow installation of the replacement system. Once deactivated, the system is eligible for removal in anticipation of the RRS installation. Unlike other types of NWS systems, where there is an overlap between the legacy and new system, RRS will be replacing MicroART in the same location. As a result, MicroART and the W9000s will need to be deactivated, first, before RRS arrives. There will not be any system back-ups provided for the down-time period between system removal and RRS installation. One exception will be the Washington/Baltimore Weather Forecast Office (WFO), which has a number of other systems residing on the same campus in case of back-up.

Decommissioning is defined as the decision that the legacy system at an individual operational site (i.e., NWFO, NWSO) **is no longer required** for the conduct of appropriate NWS service operations (i.e., can be taken out of service). This decision is based on a systematic process within the office where the equipment resides. After the equipment is decommissioned, the equipment is ready for **disposal**, which is the process of removing the equipment from the office environment. Related activities for the removal of communications interfaces and test equipment used by the site in repairing the legacy system are also performed at this time.

This plan addresses the decommissioning of upper air legacy systems and will be updated as required. The Field Systems Operations Center within the Office of Operation Systems (OOS), is responsible for the development, maintenance, and implementation of the *Legacy Systems Decommissioning Plan*, and is supported in this by the Legacy Systems Decommissioning Manager (LSDM) residing within the Observing Systems Branch (OPS22).

1.2 Purpose and Scope

This plan delineates the manner in which the decommissioning requirements of NWSPD 80-2, *System Commissioning and Decommissioning Policy*, and applicable instructions in NWSI 80-202, System Decommissioning Instructions are applied for the legacy systems. Included are: (a) specifics on what is to be decommissioned; (b) the process and procedures for the decommissioning of legacy systems; and (c) the responsibilities of NWS Headquarters (WSH) and regional personnel for the conduct of the overall decommissioning process.

1.3 Assumptions

This plan assumes a reader is knowledgeable in the operational use of upper air systems and of the requirements of NWS system commissioning and decommissioning policies and instructions as well as the transition to RRS. Documents applicable to obtaining such knowledge are listed in Section 1.4.

1.4 Organization of Plan

The *Site Component Decommissioning Plan* is divided into two parts: the Decommissioning Plan, and the Legacy System Decommissioning Evaluation Package. Section 2 describes the various legacy systems covered under this plan and Section 3 covers the expendables used by these systems. The decommissioning process and procedures are described in Section 4. Appendix A to the plan provides maps of sites and types of legacy systems in use as well as the types of radiosondes in use. The addendum delineates the decommissioning criteria and forms for completing the decommissioning process.

1.5 Applicable Documents

The following documents are considered part of the overall decommissioning documentation that should be referred to for additional information:

Table I. List of Applicable Documents.

DOCUMENT TITLE	REFERENCE NUMBER	ISSUE DATE
NDS 80-2, System Commissioning and Decommissioning	1	10/01/2002
NWSI 80-201, System Commissioning Process	2	10/03/2002
NWSI 80-202, System Decommissioning Process	3	10/03/2002
RRS Site Component Commissioning Plan and Evaluation Package	4	
MicroART Disposal Instructions	5	
RRS Deployment Plan	6	
RRS Operational Acceptance Test Plan	7	
Federal Meteorological Handbook Number 3	8	
Site Implementation Plan/Facilities Checklist	9	

2 LEGACY SYSTEMS

There are several legacy systems impacted with the commissioning of RRS. The following sections describe these systems including MicroART and the Sippican W9000 LORAN/GPS systems.

2.1 Automatic Radiotheodolite (ART) System Description

The ART system is an upgrade to both the Ground Meteorological Device (GMD) and the Weather Bureau Radiotheodolite (WBRT). The ART-1 is the GMD upgrade (see **Figure 1**) and ART-2 is the WBRT upgrade. The GMD and WBRT were the principle systems in the upper air network until the ART upgrade. These were manual systems that were labor-intensive and of tube-type technology with many mechanical parts. This equipment was not expected to last more than a few years into the 1990s, before it became exceedingly difficult to maintain. However, due to a number of factors, NWS has continued to operate the ART systems at NWS and Cooperative Hurricane Upper Air System (CHUAS) sites well-past their life expectancy and will be the commissioned systems at some locations until FY08. The ART system consists of the following major components:

Figure 1. ART-1 antenna.

- Antenna
- Antenna/Receiver Control Unit
- Master Control Unit
- Remote Control Unit

A target antenna is used to orient the ART before each flight and a clinometer is used to check the elevation angle immediately after launch to the balloon flight train made up of a radiosonde, balloon, and parachute with an optional lighting unit. Some sites may have old surface equipment that will continue in operation as a back-up to RSOIS. Some ART systems have a transponder adjunct system for when the site performed transponder flights using transponder radiosondes. These were phased out in the 1990s, but the equipment still remains at a number of locations.

2.2 MicroART Computer

The following sections provide a brief description of the MicroART system. Note, refer to Section 3 for discussions on radiosondes used with the MicroART system.

The hardware for MicroART consists of a microcomputer for acquiring and processing upper air data, a modem for communicating with host computers, and an interface board to interface with the ART system. The microcomputer system consists of the following components:

- IBM PC/XT with 256-KB RAM and 8087 Math coprocessor
- Expansion board with 384-KB RAM, 1 parallel port, 1 serial port, clock, and calendar
- Fixed hard disk (10 or 20-MB) and flexible disk drive (360-KB)
- Color graphics monitor and IBM color graphics monitor adapter
- Epson Spectrum LX-80 printer with printer cable
- Surge protector
- External Hayes Smartmodem, Type 300

Figure 2. Example of MicroART in the office environment.

The microcomputers and the peripherals were purchased in FYs 84 through 86. The ART Interface Card (ARCTIC) used with the Sippican radiosonde or SPU11 provided by Vaisala are installed in the microcomputer, allowing the system to decode the telemetered radiosonde signals and detecting the angular position of the ART antenna for winds computation. Figure 2 depicts the MicroART computer within the office environment.

The MicroART software was written in C language under the Multi-Tasking Operating System (MTOS) purchased from Industrial Products, Incorporated.

2.3 Sippican W9000 System Description

The Sippican W9000 was purchased as a commercial-off-the-shelf (COTS) system in the mid-1990s to support operations at the following sites:

- Wallops Island as a replacement for the Beukers LOCATE (LORAN-C) system
- Kingston, Jamaica and Nassau, Bahamas upper air locations in the CHUAS network, which receive good LORAN signals, have since been transitioned to the IMS 1500C.
- Albany, New York and Charleston, South Carolina as part of the Modernization and Restructuring activities

Refer to **Appendix A** for the location of these sites and the types of equipment/radiosondes used.

Historical note, the Beukers LORAN-C used a minicomputer similar to the predecessor to MicroART and operated in the 403-MHz band to avoid interference with the GOES down link, which operates in the 1680 MHz band. Because of the one-of-a-kind system configuration, this system was especially vulnerable to shortages of spare parts and needed replacement. This system used a NOVA 1220 minicomputer with additional hardware for acquiring and processing the LORAN-C signals. Albany's W9000 system was also GPS-capable as well as LORAN, and both the LORAN and GPS-types of radiosondes could be used at this site. These radiosondes used a shortened temperature rod sensor, called a small rod, instead of the longer rod used with the Sippican B2 radiosonde. The small rod has since been replaced by the newer chip technology employed by Sippican.

2.4 Upper Air System Locations

Systems used in the NWS upper air network Continental U.S., Alaska, and the Pacific Region sites are shown in **Appendix A.** The CHUAS network is not shown. Systems used within the CHUAS network included: two Sippican W9000s, 3 MicroART systems, and 5 CV-700s from Intermet Systems (IMS). All of these have been replaced by the IMS 1500C replacement system operating with the Sippican B2 radiosonde. The Sippican W9000s have been shipped to Sterling, Virginia for test support and the three MicroART systems have been returned for spare support at the National Logistics Support Center (NLSC). The five CV-700s have been returned to IMS in place of the IMS 1500C. None of these systems required formal decommissioning, since they were in support of another country's upper air program and these are not part of the NWS network.

2.5 Transition to RRS

The plan for transitioning to RRS is covered in reference 6 and operator instructions and training are found in reference 8 of Table I and can be summarized as follows:

- RRS is installed at Operational Acceptance Test (OAT) locations first
- General deployment begins at selected conterminous United States (CONUS) sites, first, followed by (outside conterminous United States OCONUS) locations
- Data Continuity Study sites are intertwined with the general deployment

The following sections provide further details.

2.5.1 OAT Sites

These sites were selected to meet field condition under which RRS must operate and are not experienced at the Sterling test facility. Examples of these types include, high altitude, very low or high humidity, and very cold temperature locations. Refer to reference 7 in Table I for additional information concerning the OAT.

2.5.2 General Deployment Strategy

With successful completion of OAT, the general deployment of RRS to upper air sites will commence. The RRS Deployment Manager (OPS12) will be responsible for managing the transition to RRS with support from OPS22. A Deployment Plan (reference 6 in Table I) contains the information for deploying RRS. A facilities checklist as part of the Site Implementation Plan (reference 9) will be required to be completed by the upper air site verifying the site is ready for RRS.

At first, the rate of deployment is expected to be one-to-two sites per month, but may be increased to three per month, if funds become available. Therefore, this process is expected to take between 3 and 4 four years to complete. For this reason, the first RRS sites to be deployed will be at locations where the MicroART equipment is either of good-to-exceptional quality or very poor. The good equipment will be returned for refurbishment by NRC to support the MicroART network for the coming years and the poorer systems will be culled out of the network to reduce overall maintenance costs. Both ART-1 and ART-2 systems will be retrieved in this manner. The internal subsystems of both types will be sent to NRC as well as the micro-computers and interface cards. At some point, there will be more than adequate sparing for the remaining MicroART systems, and thus, no additional systems will be required to be shipped to NRC. At this point, systems will be surplused on-site and disposed of according to the disposal instructions.

Target antennae are not required for operations or maintenance of the RRS, since the antenna's position is not as critical as with MicroART. Therefore, the site can leave the antenna intact, remove it, or move it somewhere else. Also, legacy surface equipment replaced by RSOIS may be removed and disposed of, if the site no longer requires it for back up purposes.

The two Sippican W9000 systems will be shipped from Albany, New York, and Charleston, South Carolina to Sterling, Virginia to support test activities.

2.5.3 Data Continuity Sites

As part of the transition activities, a data continuity study is being planned for comparing the differences in measurement between the MicroART and RRS radiosondes. A subset of the upper air network will be used to perform this study and has the MicroART as the commissioned system for the duration of the test and RRS to be situated on the ground in a separate radome. The plan is to phase-in data continuity sites (DCS) over 1-2 years. Locations having dual inflation buildings may offer the possibility of commissioning the RRS prior to the end of the study. Sites selected for the DCS must continue to support MicroART until the study is completed at that location. The current plan has the study continuing for 12 to 18 months. When the test is completed, MicroART will be decommissioned, immediately, and the RRS will be placed in the radome for commissioning. More than likely, these systems will be disposed of on site, since the DCS may not be concluded until well into FY08/09 at the early sites.

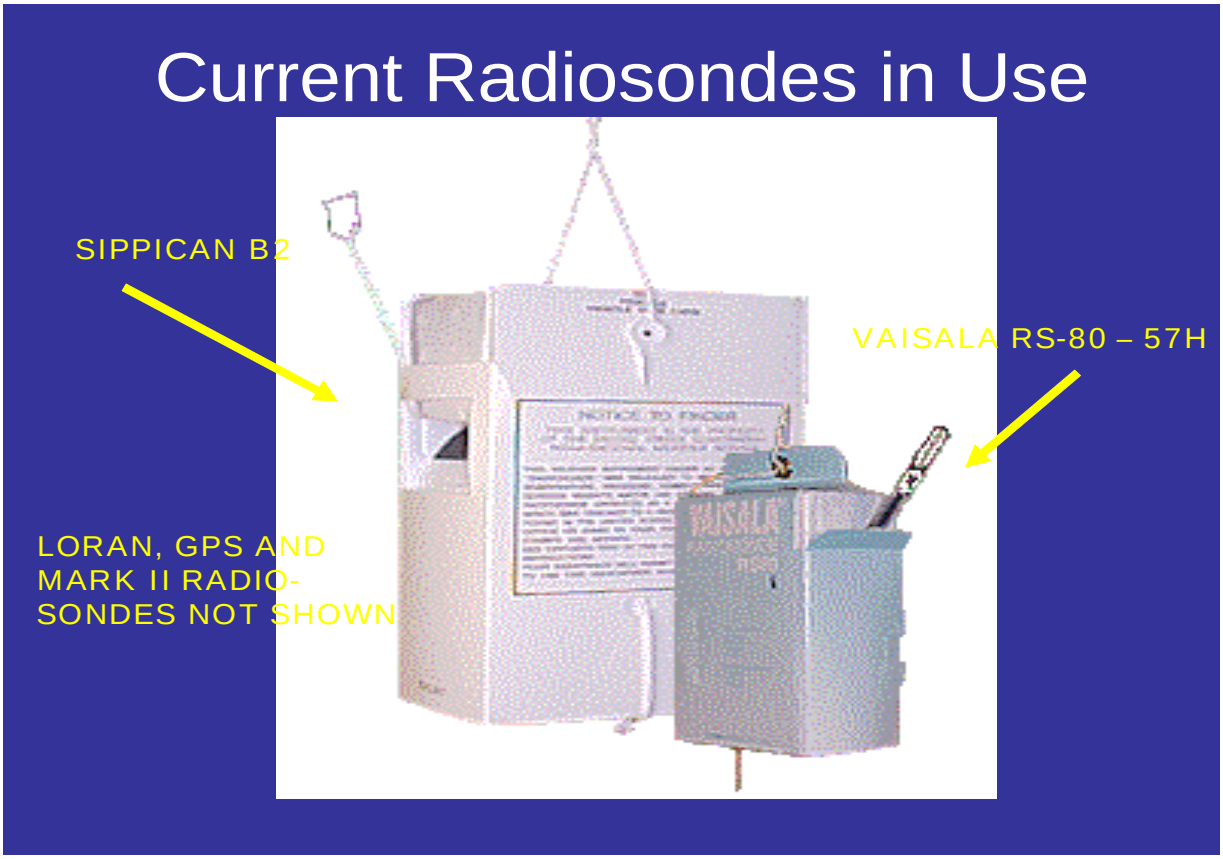


Figure 3. Radiosondes used with legacy systems.

3 EXPENDABLES

The following sections describe expendables used with the legacy systems.

3.1 Radiosonde Types

The term radiosonde is a contraction for radio-sounding device. The device measures the ambient pressure, temperature, and moisture. Winds are measured from changes in the radiosonde position during the flight. When attached to a weather balloon filled with a lighter-than-air gas, radiosondes can attain heights in excess of 30 km (over 100,000 feet). The radiosonde telemeters its data to MicroART or the Sippican W9000. ART-type radiosondes are interfaced with the ART ground equipment (ART-1 and ART-2) through the ART software. Table II lists the types of radiosondes in use with the current systems as shown in **Appendix A** and with RRS. The NWS currently uses radiosondes manufactured by Sippican and Vaisala as shown in **Figure 3**. Recovered ART-type radiosondes can be returned to the factory for reconditioning and re-flown; thus, reducing the overall cost of operating the program.

Table II. Types of Radiosondes

MFG	RADIOSONDE TYPE	MODEL NO.	GROUND SYSTEM	SYSTEM TYPE
Sippican	**B2**	**V51**	**MicroART**	**RDF**
	LORAN	**V49L**	**W9000**	**LORAN**
	MARK II		**CV-700**	**RDF**
	GPS-W9000	**V49G**	**W9000**	**GPS**
	GPS-RRS		**RRS**	**GPS**
Vaisala	**RS-80-57H**	**VSL52**	**RRS**	**RDF**

3.1.1 Warranty Radiosondes

Radiosondes rejected during baseline check-out procedures are returned to the vendor for warranty repair. The vendor returns the radiosondes for NWS use after the repair is completed. The warranty radiosondes are first sent to the NRC at the end of each quarter. NRC then determines the quantities to be shipped to the vendor. Field sites only reject radiosondes after two different upper air operators have rejected the radiosonde on different observational times.

3.1.2 Reconditioned Radiosondes

Radiosondes found by the public are returned to NRC for return to the vendor. The vendor can either repair the radiosonde or provide a new one instead. Reconditioned

radiosondes are no different in performance than new ones, but may appear to have a “used” look, not unlike a used car versus a new one. These will also be redirected to other sites just like new ones.

3.2 Floppy Disks

MicroART continues to have a requirement for 5.25" floppy disks, which are almost no longer in use in other systems. These are used to capture flight data, provide calibration data from the radiosonde vendors, and store post-flight data. Although many efforts have reduced the overall number of diskettes required on-site, there will continue to be a need for these diskettes until the last MicroART system is removed from service. Since these are becoming increasingly scarce on the open market, each site will be required to hand-off their supply to other sites at the appropriate time. OPS22 will coordinate with regional HQs on the disposition of these assets.

3.3 Printer Paper/Ribbon

Because the MicroART uses a dot matrix printer and ribbon, the paper/ribbon used with this type of printer is also difficult to find, and like the floppy disks, necessary to have on hand for sites later in the RRS deployment schedule. OPS22 will coordinate the disposition of these supplies with the regional HQ staff.

3.4 Optical Theodolite

The optical theodolite must remain on station until further guidance is given to the site. If the theodolite is housed in a radome outdoors, then it will be removed from its stand and stored indoors until further guidance is provided.

4 DEACTIVATING/DECOMMISSIONING LEGACY SYSTEMS

The following sections describe the general deactivation and decommissioning methodology for legacy systems and their associated radiosondes and other expendables.

4.1 MicroART Deactivation/Decommissioning

The following sections describe the general plan for deactivating and decommissioning the upper air legacy systems and expendables.

4.1.1 ART-1/ART-2

The ART-1 and ART-2 systems along with their components, as stated in Section 2, will be deactivated after the meteorologist-in-charge (MIC) responsible for the site has approved the Decommissioning Readiness Report (refer to Section 5). Note, the target antenna does not need to remain in service since the RRS does not require it for orientation purposes. The report offers the office an opportunity to review a number of areas, in a checklist fashion, before deactivating the system. When the report is completed and signed by the MIC, the system can be deactivated and removed from its place under the radome and prepared for disposal according to reference 2 in Table I. Once the system is deactivated, the report will be forwarded to the region for the SOD Chief's signature.

4.1.1.1 OAT Sites

At OAT sites, the process will be the same as stated in Section 3.1.1 The Test and Evaluation Branch (OPS24) will be leading this test activity.

4.1.1.2 Full Deployment Sites

Full deployment sites will follow Section 4.1.1.

4.1.1.3 DCS

Because DCS may continue to have their MicroART system commissioned in most cases until the end of the study, the deactivation and decommissioning processes will not begin until afterwards. OPS22 will notify the regional FP as to when the study is concluded at a particular site. Section 4.1.1 will apply at that time.

4.1.2 Micro-computers/Printers

Because of the difficulty of acquiring spare parts/micro-computers to support upper air operations until the end of the transition, all micro-computers and printers will be sent back to NRC for sparing until they no longer have a requirement. Of special interest, will be the ARCTIC and SPU11 cards. As a result, each site will be directed through disposal instructions as to the disposition of the micro-computer and the interface cards.

4.1.3 Floppy Disks/Printer Paper

Floppy disks/paper must be sent to other sites as directed by OPS22 and the Regional Focal Point (FP) for redistribution to other MicroART sites not yet decommissioned. The FP will direct/manage the diskettes/paper as they wish understanding the difficulty in acquiring more as the transition continues. Once a critical number of sites have decommissioned their MicroART systems, the need for more diskettes/paper will diminish and the requirement may be fulfilled through stock-on-hand. At this point, further stock can be disposed of, accordingly.

4.1.4 NLSC Stock

The logistics Branch (OPS14) has the responsibility for removing all remaining stock items for MicroART near the end of the RRS transition. Probably in the FY07 time-frame, enough spares will exist to support MicroART to the end of the transition, and thus, may not require more repair contracts to be issued. This will save the government funds. There are no spares at NLSC for the other legacy systems.

4.2 Sippican W9000 Deactivation/Decommissioning

The CHUAS W9000 systems were removed as part of the introduction of the IMS 1500C and returned to OPS22. These will be used in the Sterling test program. Similarity, the two Eastern Region offices will also ship their W9000 systems to Sterling for additional test systems. No decision has been made regarding the W9000 system at Wallops Island at this time.

4.3 Deactivating Communication Interfaces

One of the major impacts with the deactivation of the MicroART port used to communicate products to AWIPS/LDAD. The problem is due to different LDAD modem setup requirements for RRS and MicroART . RRS uses an LDAD modem configured as a PPPInteractive port (Point to Point connection used for Telnet or FTP protocols). The MicroART port is configured as a Csportd port (simulates a pseudo terminal). As a result of the transition to RRS operations, the field site will have to switch ports on the LDAD to support the RRS protocol for transmission of upper air products. This transition must be accomplished between the time the site deactivates the legacy system and the time RRS is activated. Note this applies to Sippican W9000 sites as well. **Appendix A** illustrates the primary, secondary, and tertiary sites for this connectivity. Sites will return the Hayes Smart Modem, Type 300 back to NLSC for further use.

4.4 Radiosonde Transition

The following sections describe the plans for radiosondes, excess batteries and battery testers re-direction as a result of the deactivation/decommissioning of the legacy system.

4.4.1 Sippican B2/Batteries and Battery Tester

Excess radiosondes, whether full or partial boxes, will be shipped to another site within the region, first, for further use by that site, or to another region if there are no other Sippican B2 sites left within the region. Sites at the end of the transition will ship radiosondes back to NLSC for redistribution to CHUAS sites.

4.4.2 Vaisala RS-80-57H/Batteries

Excess Vaisala radiosondes/batteries on-site will have a similar disposition to the Sippican B2 radiosondes with one major exception. Because this model of radiosonde may not survive beyond the transition, just about all radiosondes must be flown by the end of the transition. As a result, OPS22 will be managing the number of radiosondes in the field and at NLSC to ensure there does not exist a large number of this type by the end.

4.5 Warranty Radiosondes

When the system is decommissioned by the region, all warranty radiosondes on-site must be shipped back to NRC immediately, instead of waiting for the quarter to end. Weather Service Form H-6 must be completed indicating that all remaining rejected radiosondes have left the office. It is imperative to have radiosondes removed as quickly as possible to ensure they do not fall out of the warranty period due to forgetfulness on a site's part. OPS22 will be coordinating this activity with the regional FP.

4.5.1.1 Reconditioned Radiosondes

NRC will continue receiving both the Sippican B2 and Vaisala RS 80-57H radiosondes from the public. However, under the bridge radiosonde contract, only Sippican radiosondes will be reconditioned, since they can be re-used in the CHUAS network, while Vaisala's may be phased out of the upper air network.

4.5.2 Mark II

The Mark II radiosonde has been phased out of the CHUAS network as part of the deployment of the IMS 1500Cs in 2003. Excess radiosondes were re-directed by OPS22 for test and demonstration purposes.

4.5.3 Sippican LORAN/GPS/Radiosondes/Batteries

Only the Albany, New York and Charleston, South Carolina W9000 systems in the CONUS network will be deactivated if replaced by RRS. CHUAS sites have had their W9000 systems replaced by the IMS 1500Cs and residual LORAN/GPS radiosonde/battery stocks were returned to OPS22 for test purposes. LORAN radiosondes/batteries at the two Eastern Region locations will be sent directly to Wallops Island upon the decommissioning of their W9000 systems. Since Wallops Island will be the only W9000 system in the network remaining, the
plan may be to work out an arrangement for them to furnish their own radiosondes into the future.

4.6 Operational Forms

After the last upper air observation has been taken with the legacy system, the site operations staff will complete WS FORMs B-85, H-6, and B29, electronically. The forms will indicate in the appropriate REMARKS block that this is the last entry for the legacy system and denote the last ascension number along with the date time. This will correlate to the date/time denoted in the decommissioning report (see Section 5).

4.7 Final Archive of Data

When the last observation has been taken with the legacy system commensurate with the PNS announcing the decommissioning, the site will ensure the upper air flights for that month are shipped to NCDC using the

standard procedure in accordance with reference 8 in Table I. This must be completed within 5 days of the decommissioning event to ensure no observations are lost as a result of the transition to RRS.

5 GENERAL DECOMMISSIONING PROCESS

The decommissioning process is intended to be streamlined and efficient while ensuring the orderly removal of legacy systems, expendables, and other equipment from site operations. Many field offices have already had experience removing equipment from their sites; however, this decommissioning activity is inherently different, since, in most cases, the MicroART or W9000 system must be deactivated and removed from the top of an inflation shelter before the RRS can be installed. In a small number of cases the RRS will be situated in another building, nearby.

5.4 Performing the Decommissioning Review

When the field site is preparing for the implementation and commissioning of RRS, the site personnel are also preparing for the decommissioning of the replaced legacy systems. As part of the deployment of RRS, a facilities checklist is required -- see reference 9 in Table I for verifying the site is ready to accept RRS. This checklist must be completed before the MicroART can be deactivated/decommissioned. Another aspect of the review is the transfer of telecommunications as stated in Section 4.3 Also, ART-1/2 sites will have had their transponder adjunct subsystem (that is, transmitter/comparator system) removed and all ART-2 sites will have their transformer chassis removed before the site is decommissioned to eliminate PCBs onsite.

Other areas evaluated during the decommissioning process include, identifying any test equipment to be returned to NRC, ensuring NCDC has received the final archive data from the legacy system, preparing shipments of radiosondes/floppy disks per OPS22 instructions, and returning any spare components back to NLSC. Disposal instructions will also be provided to the site by the Acquisition and Design Branch (OPS12) before the deactivation of the legacy system.

During this period, the procedures described in the addendum will be followed by the site staff performing the decommissioning evaluation.

5.4.1 Completing the Decommissioning Documentation

Before the replacing technology has been installed and commissioned, the field office needs to prepare the necessary decommissioning documentation as outlined in the addendum to this plan. A *Decommissioning Readiness Report (DRR)* is prepared after the review has been completed. Guidelines, in the form of *Decommissioning Evaluation Criteria* (DEC), are found in the **Addendum I** to assist the field site with determining when the equipment and communication links are no longer required. The Meteorologist-in-Charge (MIC) has the responsibility for determining when the legacy system is ready for decommissioning and has the authority to challenge the decommissioning date pre-established by the site if weather or other activities were the cause. The MIC must, however, contact either the RRS Deployment Manager (DM) or the LSDM through their respective region indicating the reason for any delay in the decommissioning of the legacy system.

5.4.2 DRR Approval

When the necessary documentation is completed at the site, the site management reviews it and makes the recommendation to their regional Systems Operations Division Chief for DRR approval. The decommissioning becomes "official" when the DRR is approved at this level.

The original is sent to the LSDM, who places it in the Technical Reference Library within WSH.

5.4.3 Management Information Retrieval System (MIRS)

MIRS is the agency's central data base for capturing decommissioning events including, decommissioning, transfer dates, and updating metadata databases. MIRS will contain decommissioning-related information as well as schedules for deactivation and decommissioning of sites. The URL for this site is http://nws.mirs.noaa.gov.

5.5 Notification of Users

Part of the decommissioning process involves the notification of users at both the local and national level to ensure they are prepared for the changes. Local offices will take the lead in communicating these notices to their constituents, while at the national level, advance notices will be issued providing a "heads-up" to external users. At least 30-days before the MicroART is to be deactivated, a notification message from the field office will be issued over AWIPS, followed by another one within a week of the event. Each WFO will issue a Public Notification Statement (PNS - see Exhibit 1) describing the change and its impact to all affected users. Offices not connected to AWIPS will have their region perform this function.

Exhibit 1. Sample Public Notification Statement

NOUS41 KWBC DDHHMM
PNSWSH

TECHNICAL IMPLEMENTATION NOTICE 05-XX
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
XXXX XM EDT XXX APR XX 2005

TO: FAMILY OF SERVICES /FOS/ SUBSCRIBERS...NOAA WEATHER WIRE SERVICE /NWWS/ SUBSCRIBERS...EMERGENCY MANAGERS WEATHER INFORMATION NETWORK /EMWIN/ SUBSCRIBERS... NOAAPORT SUBSCRIBERS...OTHER NATIONAL WEATHER SERVICE /NWS/ CUSTOMERS AND PARTNERS...NWS EMPLOYEES

FROM: MIC'S NAME
OFFICE NAME

SUBJECT: MICROART SYSTEM DECOMMISSIONING
EFFECTIVE MAY 200X

NOTE: THE FOLLOWING CHANGES HAVE NO IMPACT ON NOAA WEATHER WIRE SERVICE SUBSCRIBERS.

THIS IS THE FIRST MESSAGE IN A SERIES ON THE TRANSITION FROM THE CURRENT UPPER AIR SYSTEM, MICROART, TO THE RADIOSONDE REPLACEMENT SYSTEMS /RRS/. THE LAST MESSAGE ON THIS SUBJECT WILL BE TRANSMITTED AFTER THE COMMISSIONING OF RRS HAS OCCURRED.

THE DECOMMISSIONING WILL OCCUR AFTER THE XXXX UTC SOUNDING FROM THIS LOCATION ON THE FOLLOWING DATE XXXX. THERE WILL NOT BE ANY INTERMEDIATE SOUNDING TAKEN UNTIL RRS IS INSTALLED AND OPERATING. ANOTHER MESSAGE WILL BE ISSUED INDICATING THE FIRST OFFICIAL SOUNDING WITH THE RRS.

THE HEADER FOR CARIBOU...MAINE...KCAR /STATION ID 72712/ HAS NOT CHANGED WITH THE INTRODUCTION OF THE RRS. THE OFFICIAL HEADER OF THE CARIBOU OFFICE WILL CONTINUE TO BE USED FOR TRANSMISSION OF OFFICIAL PRODUCTS.

IF YOU OR YOUR ORGANIZATION WISHES TO PARTICIPATE IN THIS TEST OR HAVE ANY QUESTIONS ABOUT THESE CHANGES, PLEASE CONTACT:

OFFICE CONTACT:
ADDRESS
PHONE:
E-MAIL:

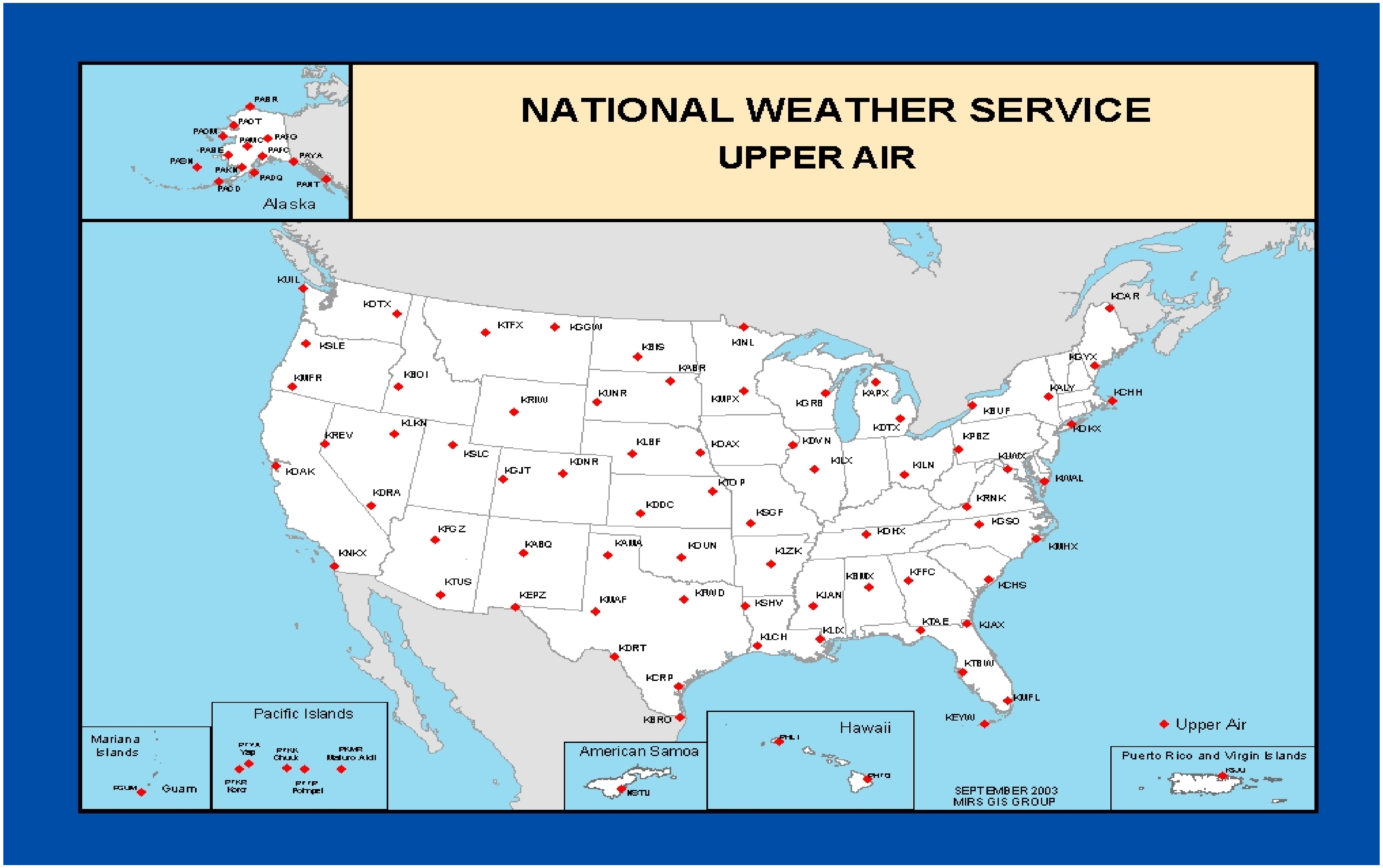
THIS AND OTHER NWS TECHNICAL IMPLEMENTATION NOTICES ARE AVAILABLE ONLINE AT /USE LOWER CASE LETTERS/:

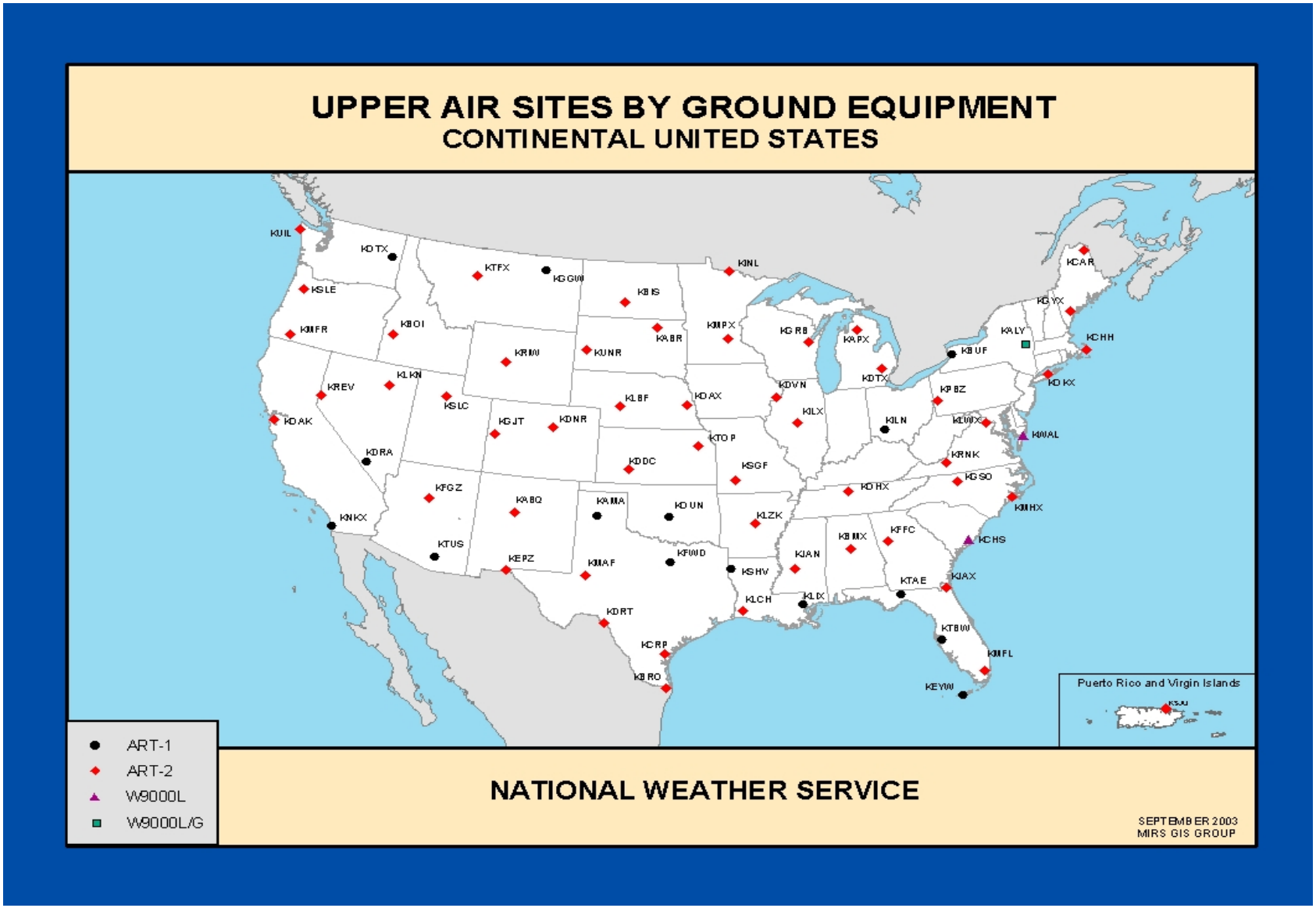
HTTP://WWW.NWS.NOAA.GOV/OM/NOTIF.HTM

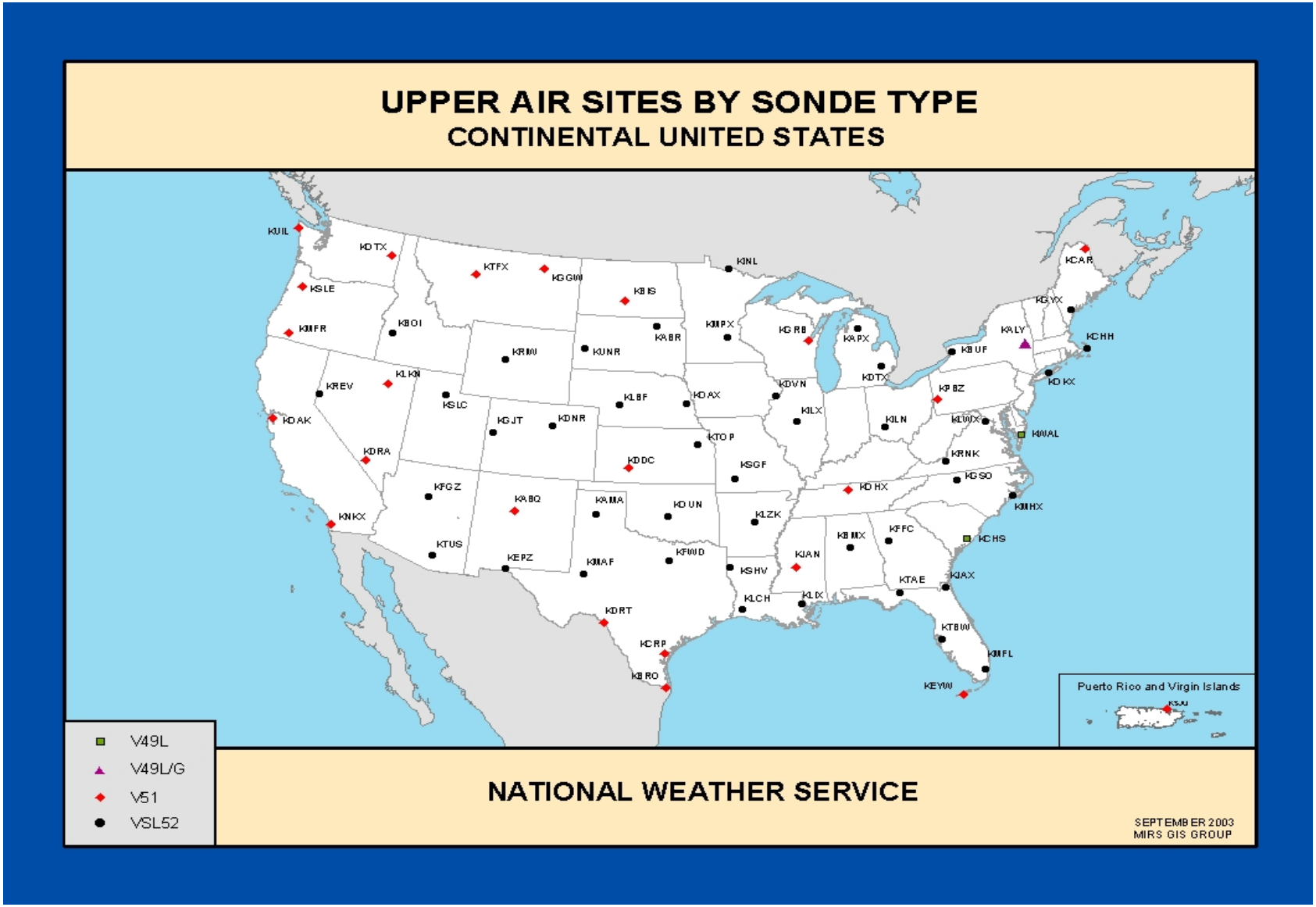
$$
NNNN

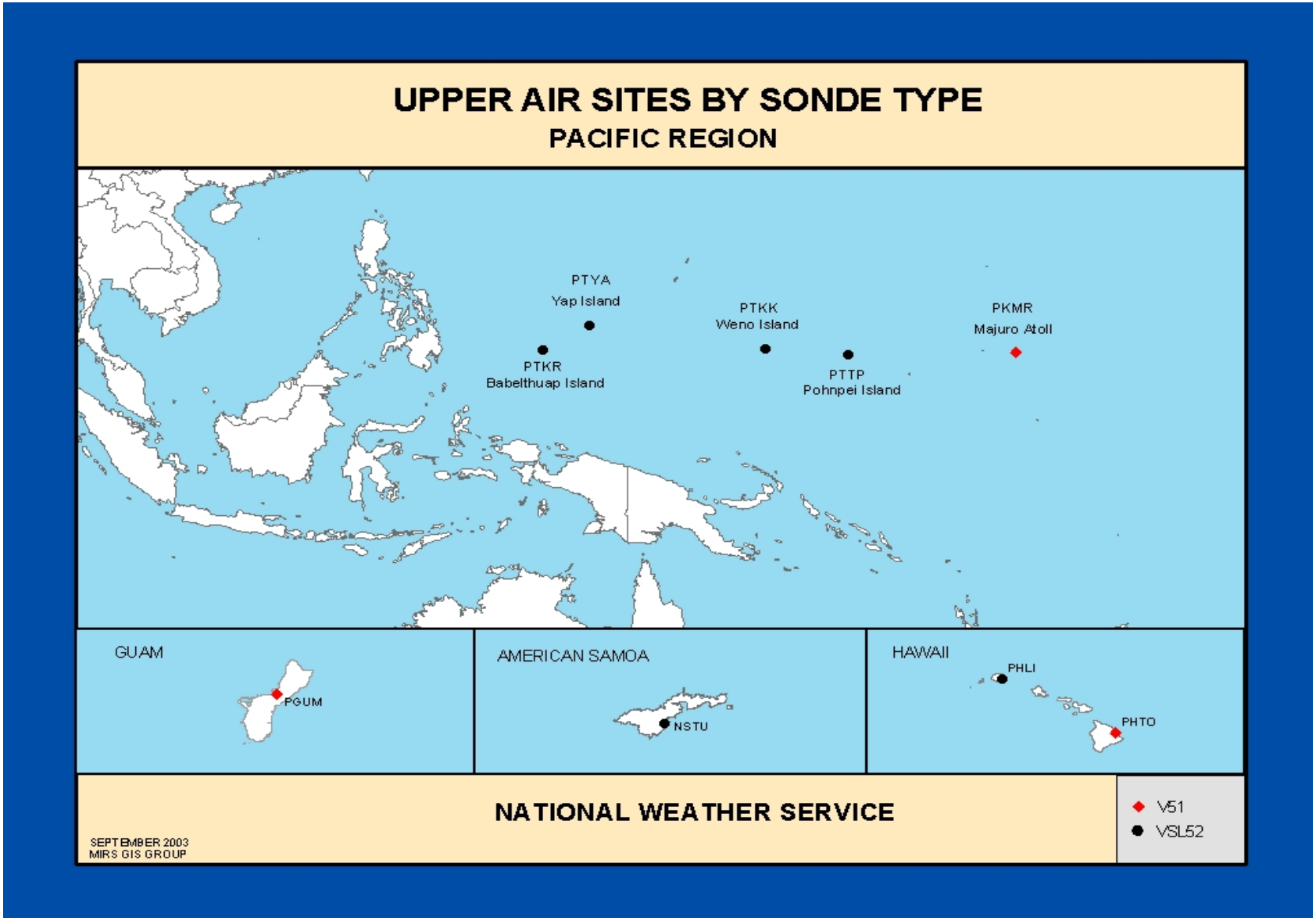
Appendix A.

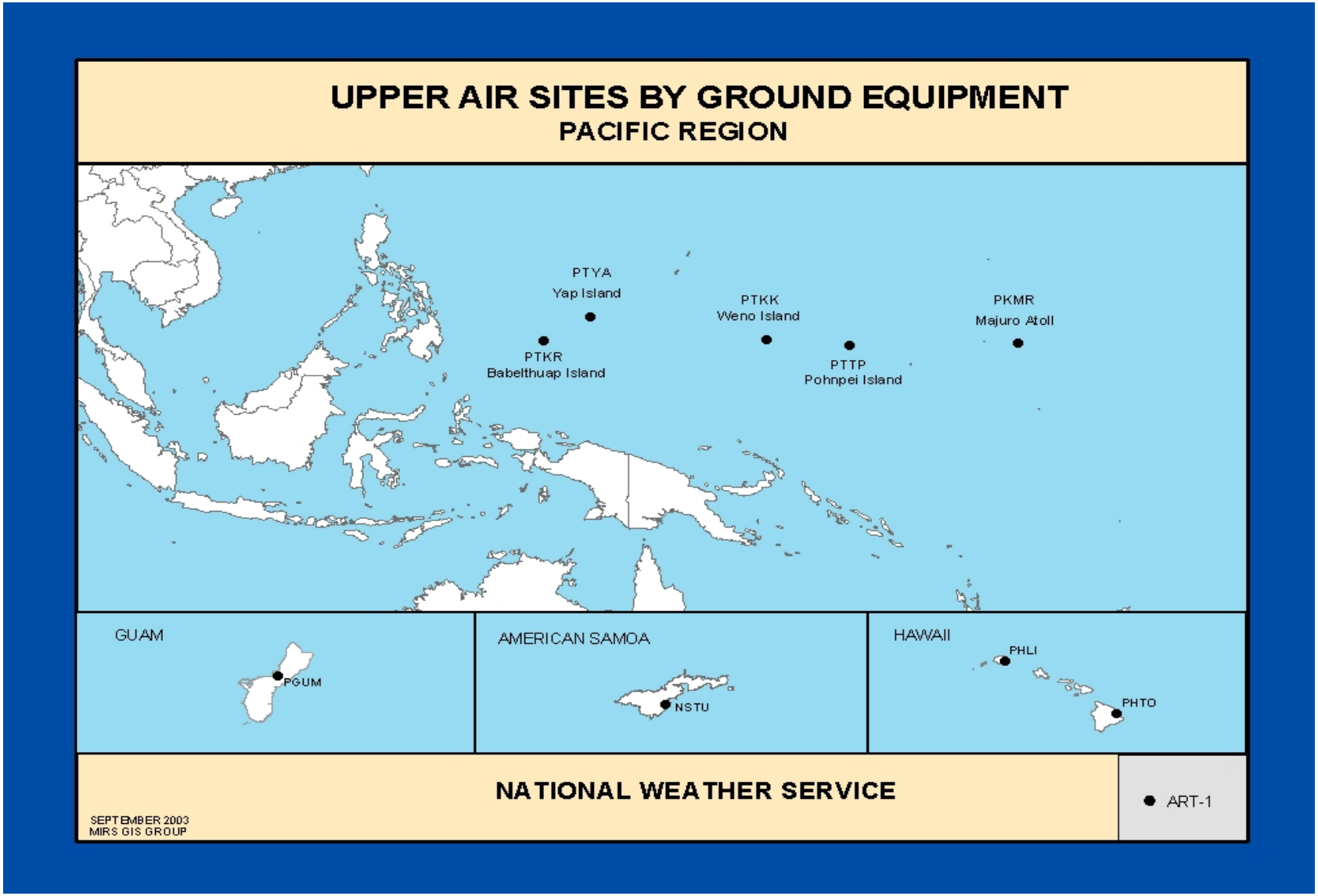
Network Maps

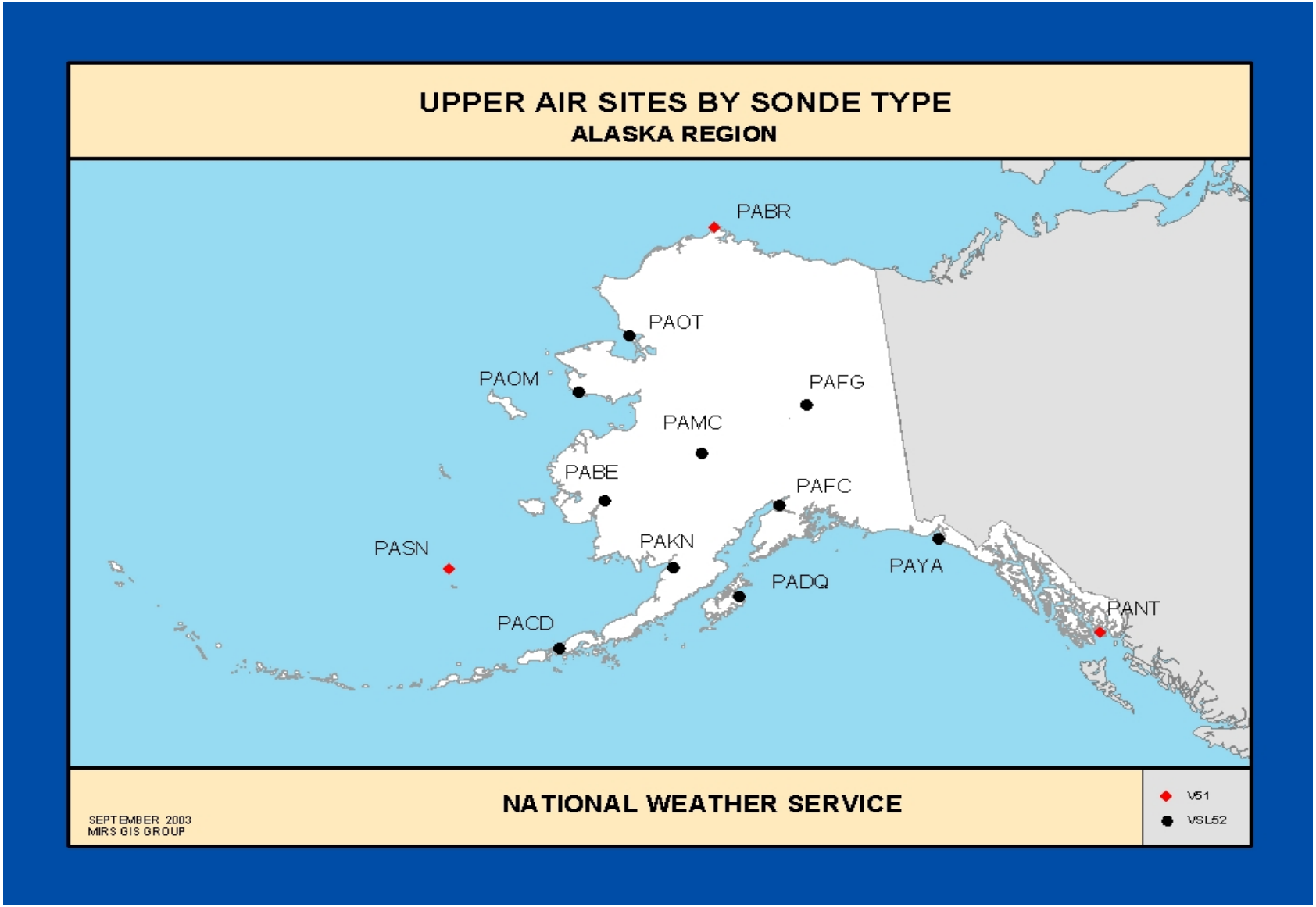

NATIONAL WEATHER SERVICE
UPPER AIR
Alaska
Mariana Islands
Guam
Pacific Islands
American Samoa
Hawaii
Puerto Rico and Virgin Islands
Upper Air
SEPTEMBER 2003
MIRS GIS GROUP

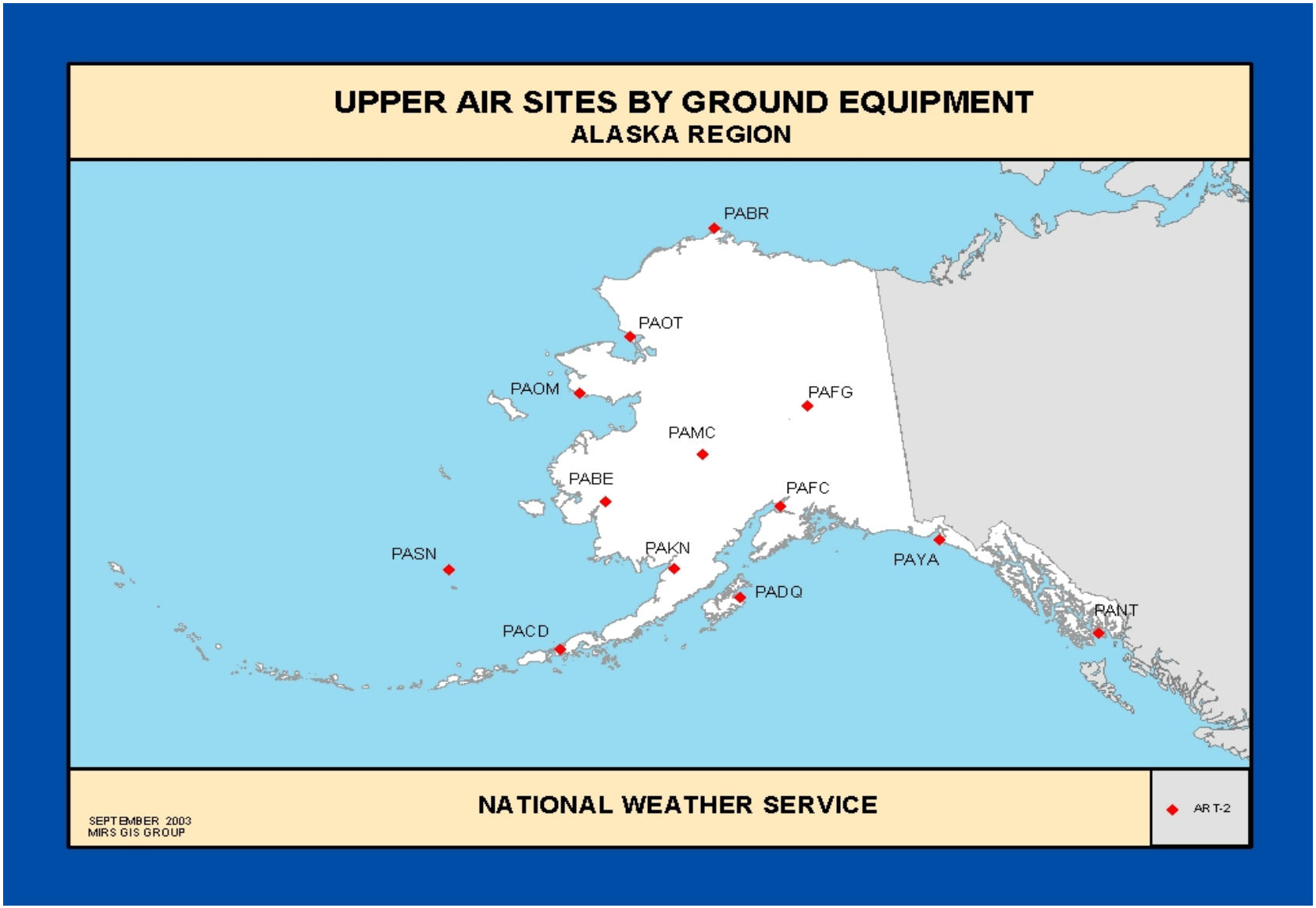

UPPER AIR SITES BY GROUND EQUIPMENT
CONTINENTAL UNITED STATES
KUIL
KDTX
KTFX
KGGW
KBIS
KINL
KCAR
KSLE
KGYX
KMFR
KBOI
KMPX
KGRB
KAPX
KALY
KCHH
KRIW
KABR
KUNR
KBUF
KREV
KLKN
KDVN
KDTX
KDIX
KSLC
KLBF
KOAX
KPBZ
KOAK
KGJT
KDNR
KILX
KILN
KLWX
KWAL
KTOP
KDRA
KRNK
KDDC
KSGF
KGSO
KFGZ
KABQ
KAMA
KDUN
KDHX
KMHX
KNKX
KLZK
KTUS
KMAF
KFWD
KBMX
KFFC
KCHS
KEPZ
KSHV
KJAN
KJAX
KTAE
KLCH
KLIX
KDRT
KTBW
KCRP
KMFL
KBRO
KEYW
Puerto Rico and Virgin Islands
ART-1
ART-2
W9000L
W9000L/G
NATIONAL WEATHER SERVICE
SEPTEMBER 2003
MIRS GIS GROUP

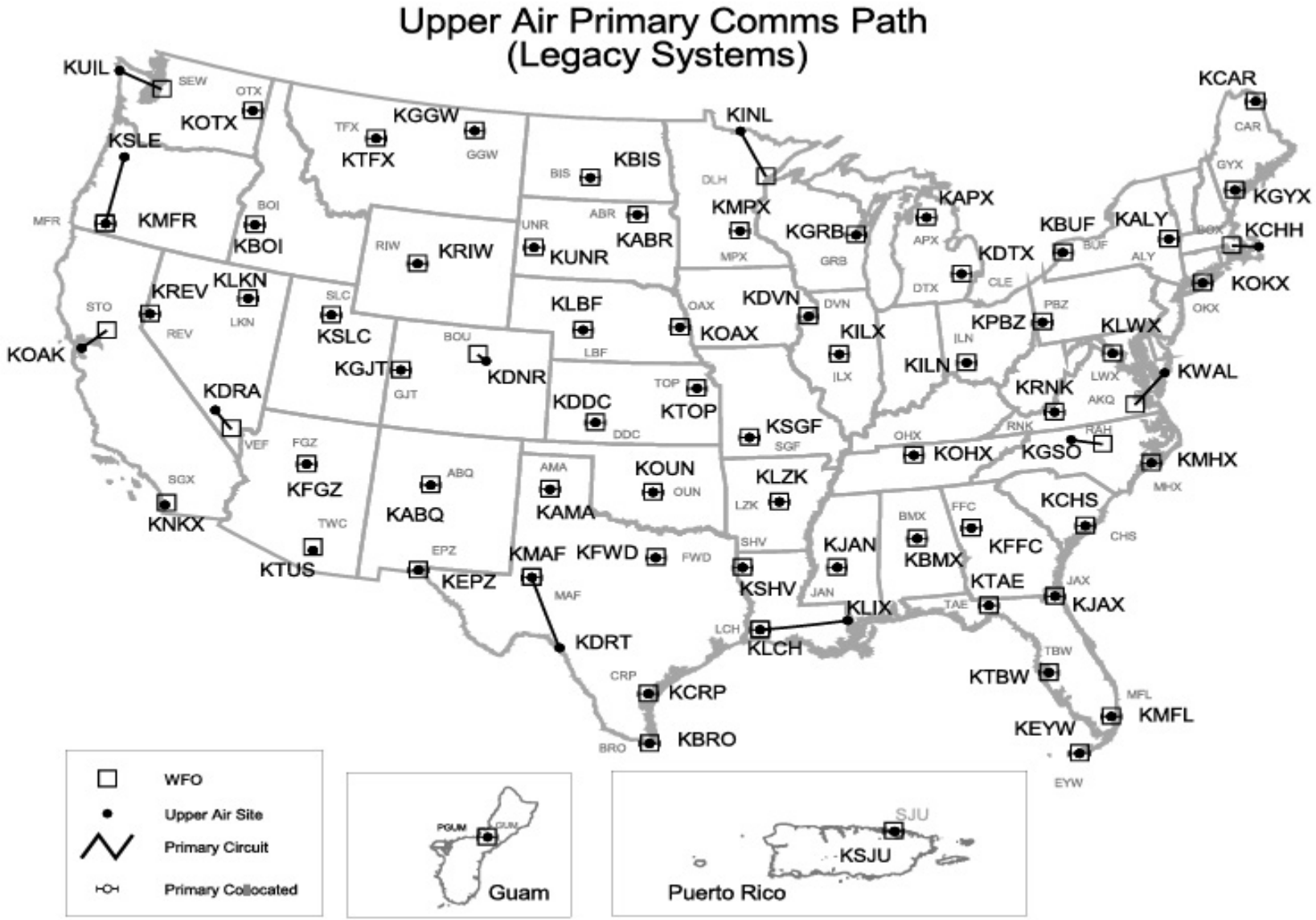

UPPER AIR SITES BY SONDE TYPE
CONTINENTAL UNITED STATES
KUIL
KDTX
KTFX
KGGW
KBIS
KINL
KCAR
KSLE
KGYX
KMFR
KBOI
KABR
KMPX
KGRB
KAPX
KALY
KBUF
KCHH
KRIW
KUNR
KREV
KLKN
KSLC
KLBF
KOAX
KDVN
KDTX
KPBZ
KDAK
KGJT
KDNR
KILX
KILN
KLWX
KDOX
KTOP
KWAL
KDRA
KDDC
KSGF
KRNK
KFGZ
KABQ
KAMA
KDUN
KDHX
KGSO
KNHX
KNKX
KLZK
KTUS
KEPZ
KMAF
KFWD
KBMX
KFFC
KCHS
KSHV
KIAN
KTAE
KJAX
KLCH
KLIX
KDRT
KTBW
KCRP
KMFL
KBRO
KEYW
Puerto Rico and Virgin Islands
V49L
V49L/G
V51
VSL52
NATIONAL WEATHER SERVICE
SEPTEMBER 2003
MIRS GIS GROUP

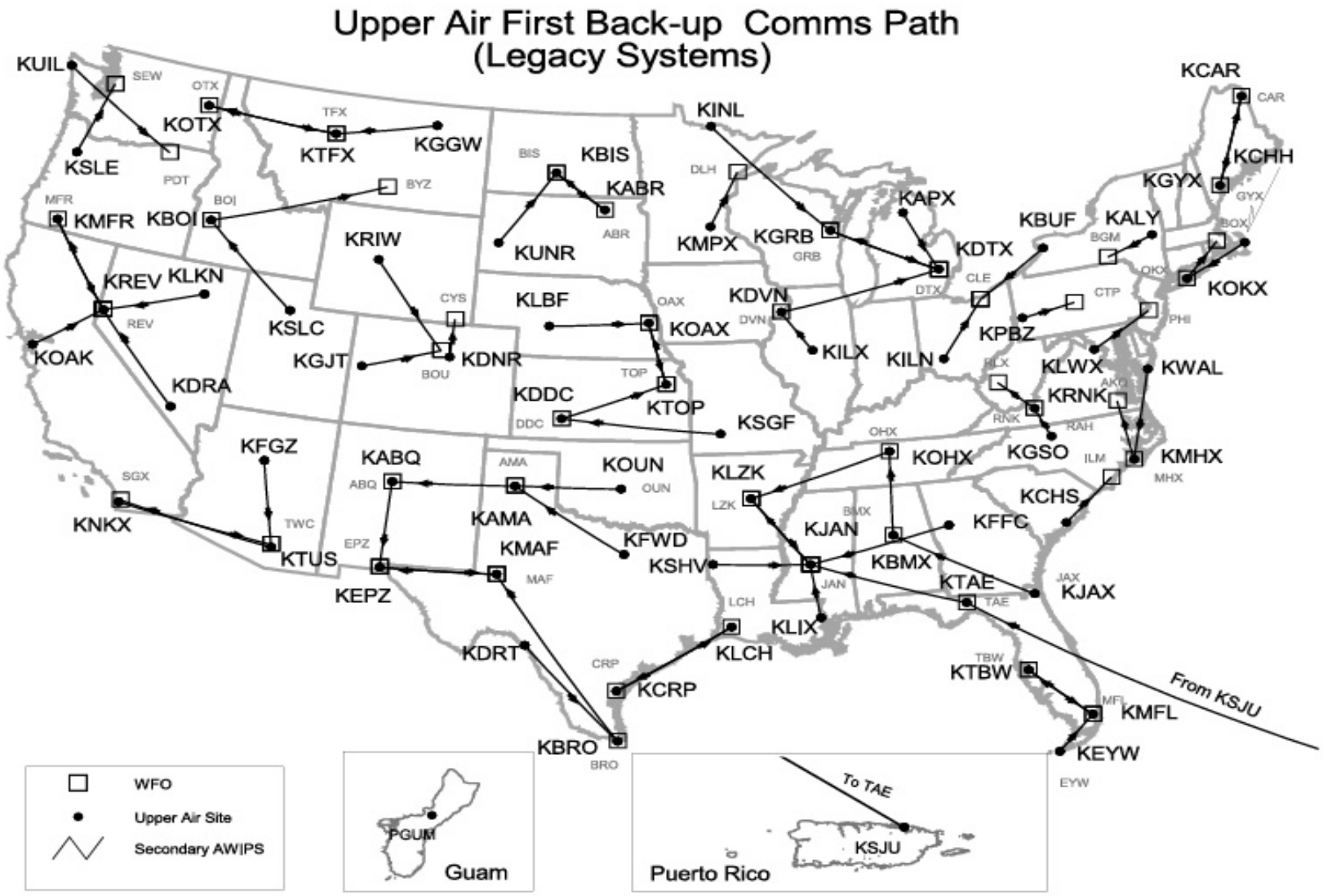

UPPER AIR SITES BY SONDE TYPE
PACIFIC REGION
PTYA
Yap Island
PTKK
Weno Island
PKMR
Majuro Atoll
PTKR
Babelthuap Island
PTTP
Pohnpei Island
GUAM
PGUM
AMERICAN SAMOA
NSTU
HAWAII
PHLI
PHTO
NATIONAL WEATHER SERVICE
V51
VSL52
SEPTEMBER 2003
MIRS GIS GROUP


UPPER AIR SITES BY GROUND EQUIPMENT
PACIFIC REGION
PTYA
Yap Island
PTKR
Babelthuap Island
PTKK
Weno Island
PTTP
Pohnpei Island
PKMR
Majuro Atoll
GUAM
PGUM
AMERICAN SAMOA
NSTU
HAWAII
PHLI
PHTO
NATIONAL WEATHER SERVICE
ART-1
SEPTEMBER 2003
MIRS GIS GROUP


UPPER AIR SITES BY SONDE TYPE
ALASKA REGION
PABR
PAOT
PAOM
PAFG
PAMC
PABE
PAFC
PASN
PAKN
PADQ
PAYA
PACD
PANT
NATIONAL WEATHER SERVICE
SEPTEMBER 2003
MIRS GIS GROUP
V51
VSL52


UPPER AIR SITES BY GROUND EQUIPMENT
ALASKA REGION
PABR
PAOT
PAOM
PAFG
PAMC
PABE
PAFC
PASN
PAKN
PAYA
PADQ
PANT
PACD
NATIONAL WEATHER SERVICE
SEPTEMBER 2003
MIRS GIS GROUP
AR T-2


Upper Air Primary Comms Path
(Legacy Systems)
KUIL
SEW
OTX
KOTX
KSLE
KMFR
MFR
BOI
KBOI
KGGW
TFX
KTFX
GGW
KBIS
BIS
KINL
DLH
KMPX
MPX
KGRB
GRB
KAPX
APX
KABR
ABR
UNR
KUNR
RIW
KRIW
KREV
REV
KLKN
LKN
STO
KOAK
SLC
KSLC
KLBF
LBF
KOAX
OAX
KDVN
DVN
KILX
ILX
KPBZ
PBZ
KLWX
KILN
ILN
KWAL
LWX
KRNK
AKQ
KGJT
GJT
BOU
KDNR
KDRA
VEF
KDDC
DDC
KTOP
TOP
KSGF
SGF
OHX
KOHX
KGSO
RAH
RNK
KMHX
MHX
FGZ
KFGZ
SGX
KNKX
ABQ
KABQ
AMA
KAMA
KOUN
OUN
KLZK
LZK
KCHS
CHS
BMX
FFC
KFFC
KBMX
TWC
KTUS
EPZ
KEPZ
KMAF
MAF
KFWD
FWD
SHV
KSHV
KJAN
JAN
KTAE
TAE
JAX
KJAX
KLIX
LCH
KLCH
KDRT
CRP
KCRP
BRO
KBRO
TBW
KTBW
MFL
KMFL
KEYW
EYW
KCAR
CAR
GYX
KGYX
BOX
KCHH
BUF
KBUF
KALY
ALY
DTX
CLE
KDTX
OKX
KOKX
WFO
Upper Air Site
Primary Circuit
Primary Collocated
PGUM
GUN
Guam
SJU
KSJU
Puerto Rico


Upper Air First Back-up Comms Path
(Legacy Systems)
KUIL
SEW
OTX
KOTX
TFX
KTFX
KGGW
KSLE
PDT
BIS
KBIS
KABR
ABR
KUNR
KINL
DLH
KMPX
KGRB
GRB
KAPX
KDTX
DTX
KBUF
KALY
BGM
KCAR
CAR
KCHH
KGYX
GYX
BOX
KOKX
OKX
CTP
PHI
KPBZ
KILN
CLE
KLWX
KWAL
RLX
AKQ
KRNK
RNK
RAH
KGSO
ILM
KMHX
MHX
KCHS
KFFC
KJAX
JAX
TAE
KTAE
KBMX
BMX
KJAN
JAN
KLIX
KSHV
KFWD
KOHX
OHX
KLZK
LZK
KOUN
OUN
AMA
KAMA
KABQ
ABQ
KFGZ
KMAF
MAF
KEPZ
EPZ
KTUS
TWC
KNKX
SGX
KDRT
KLCH
LCH
KCRP
CRP
KBRO
BRO
KDDC
DDC
KTOP
TOP
KSGF
KLBF
KOAX
OAX
KDVN
DVN
KILX
KRIW
CYS
KDNR
BOU
KGJT
KSLC
BYZ
KBOI
BOI
KMFR
MFR
KREV
REV
KLKN
KOAK
KDRA
KTBW
TBW
KMFL
MFL
KEYW
EYW
From KSJU
To TAE
KSJU
Puerto Rico
PGUM
Guam
WFO
Upper Air Site
Secondary AWIPS

APPENDIX B
LIST OF ART EQUIPMENT TO BE DECOMMISSIONED

LIST OF ART EQUIPMENT TO BE DECOMMISSIOINED

Description	ART-1	Enter Qty	ART-2	Enter Qty
Deactivation Date:				
RF Assembly	J170-1A1A1		J170-1A1A1	
Pylon assembly	J170-1A1A2-1		J170-1A1A2-2	
Receiver/antenna control unit	J170-1A3A1		J170-1A3A1	
Elevation drive assembly	J170-1A3A2A1		J170-1A2A2	
Azimuth drive assembly	J170-1A3A3A1		J170-1A3A2	
Angle time assembly	J170-3A2		J170-3A2	
Master control unit	J170-3		J170-3	
Remote control unit front panel	J170-5A1		J170-5A1	
MicroArt/minicomputer interface cable	J170-W37A		J170-W37A	
Pedestal housing/antenna assembly cable	J170-W101		J170-W101	
Pedestal housing/azimuth unit cable	J170-W701		J170-W701	
Pedestal housing to azimuth unit cable	J170-W702		J170-W702	
Pedestal housing to elevation assembly cable	J170-W951		J170-W951	
XT computer with printer	M003-1/M003-2		M003-1/M003-2	
ARCTIC card	M003-1A1A1		M003-1A1A1	
SPU-11 interface card	M003-1A1A4		M003-1A1A3	
RS80-57H radiosonde, new	J030-1		J030-1	
B2 radiosonde, new	J031-1		J031-1	
Loran-C radiosonde, new	J032-1		J032-1	
RS80-57H-RC radiosonde (reconditioned)	J035-1		J035-1	
B2 radiosonde (reconditioned)	J036-1		J036-1	
Optical Theodolite				
Hayes Smart Modem, Type 300	M003-6		M003-6	
5.25" Floppy Disks				
Spare Batteries				
Spare Hygristors				
Printer Accessories, e.g, ribbons				